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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,111	05/02/2001	Ya-Chan Cheng	148693.00359	5405

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GENUS LAW GROUP
5543 TALON COURT
FAIRFAX, VA 22032

EXAMINER

STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,111

Applicant(s)

CHENG, YA-CHAN

Examiner

Gordon J. Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The Amendment received on May 30, 2006 has been entered into the record.

Drawings

2. The amended drawing of November 25, 2003 (Fig. 2) is objected to because it is not labeled in the top margin as a 'Replacement Sheet,' though the Examiner does accept the correction to the drawing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112 and 35 USC § 101

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. **Claims 48-50** are rejected under 35 U.S.C. 112 second paragraph as being indefinite, for **claims 24-26** claim both an apparatus, a measuring system, and the method steps of placing, moving, irradiating, and analyzing. A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. *In Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990).*

Claims 48-50 are rejected under 35 U.S.C. 101 based on the theory that **claims 24-26** are directed to neither a “process” nor a “machine,” but rather embraces or overlaps two different statutory classes of invention set forth in U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. *Id.* at 1551.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 27, 28, 32, 33, 34, 35, 39, 40, 45-47** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)**—previously cited in view of **Sampsell et al. (5,327,286)**—previously cited and further in view of **Goodwin et al. (5,997,588).**

As for **claims 27, 28, 32, 33, 34, 35, 39, 40, 45-47**, Imai in a film thickness measuring apparatus discloses the following: a stage located on a transport apparatus, wafer transport chamber apparatus (Fig. 1: 54, 48); a platen for the wafer (Fig. 1: 62) with wafer cassette too

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(Fig. 1: C); a lens above stage in film thickness measuring system suggested by irradiating units and detecting units above stage (Fig. 1: 56, 58); a gas supplier that supplies inert nitrogen gas (Fig. 1: 68, 70, 72; col. 2, lines 60-65); a first gas nozzle on a side of said platen to exhaust gas into chamber (Fig. 1: 64c, 64d); a second nozzle on side of stage (Fig. 1: 64a); a first tube and second tube suggested by gas pipes from gas supplier to nozzles (Fig. 1: 66), wherein a gas stream 5' formed from arrows entering chamber from nozzles to exhaust system (Fig. 1: 64a-64e, 76, 80, 82); a transport slot that has a channel to collect and exhaust gases (Fig. 1: 76); gas extracting apparatus with third tube suggested by arrow from 76 to 82 in Fig. 1; valve on first nozzle (Fig. 1: 70); a robot moves wafer (Fig. 1: 62); as for a movable stage, Imai is silent. However, the system is a film measuring system (Fig. 1: 56 and 58). And Examiner takes official notice that movable stages are well known in the art for positioning and aligning wafers in measurement systems. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the measuring table be movable in order to position the wafer precisely under the measurement apparatus above.

As for a datum platen with datum slice as a measuring reference point, Imai is silent. However, Sampsell in a real time optical correlation system teaches using a datum slice with datum platen for measurement correlation (Fig. 5: 41, 53; col. 1, lines 10-20). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a datum platen with datum slice beside the wafer under test in order to provide a reference point to quantify the thickness measurement.

In addition, Imai discloses the gas supplier is opened to make purge gas that passes through first tube and second tube and exhausted from first gas nozzle and second gas nozzle to

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form a gas stream (Fig. 1: 70, 68, 66 to 64a-64d to form gas streams designated by arrows from 64a-64d) during a measuring process (col. 7, lines 1-15). As for the gas supplier and gas-exhausting apparatus being opened continuously in said measuring process, he suggests this for the purge gases fill the system during measurement (col. 7, lines 1-15) and there is continuous opening suggested by the purging gases being at particular flow rate and the exhaust system being controlled and therefore opened to have the chambers be at a higher pressure than atmospheric (col. 7, lines 25-40). Nevertheless, Goodwin in a semiconductor processing system teaches having the input and output of purge gases continuously opened (col. 6, lines 25-35). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the gas supplier and gas-exhausting apparatus opened continuously in said measuring process to prevent particulates and other contaminants to adhere to the wafer being measured.

4. **Claims 29, 36, 41, 43, and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)**—previously cited in view of **Sampsell et al. (5,327,286)**—previously cited and further in view of **Goodwin et al. (5,997,588)** further in view of **Iida et al. (5,527,417)**—previously cited

As for **claims 29 and 36**, Imai in view of Sampsell and Goodwin disclose everything as above (see **claims 27 and 34** above). In addition, Imai discloses a second nozzle to the oxygen supplier (Fig. 1: 70). Imai is silent concerning valves on the tubes to the other plurality of nozzles, but there is at least one valve to one nozzle (Fig. 1: 70 with 72). However, Iida in a wafer process apparatus teaches having a valve for a nozzle to control gas into the chamber (col. 20, lines 1-15). Therefore, it would be obvious to one of ordinary skill in the art at the time the

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invention was made to have each nozzle have an accompanying valve in order to control the amount of gas entering the chamber.

As for **claims 41, 43, 44**, Imai in a film thickness measuring apparatus discloses the following: a stage located on a transport apparatus, wafer transport chamber apparatus (Fig. 1: 54, 48); a platen for the wafer (Fig. 1: 62) with wafer cassette too (Fig. 1: C); a lens above stage in film thickness measuring system suggested by irradiating units and detecting units above stage (Fig. 1: 56, 58); a gas supplier that supplies inert nitrogen gas (Fig. 1: 68, 70, 72; col. 2, lines 60-65); a first gas nozzle on a side of said datum platen to exhaust gas into chamber (Fig. 1: 64c, 64d); a second nozzle on side of stage (Fig. 1: 64a); a first tube and second tube suggested by gas pipes from gas supplier to nozzles (Fig. 1: 66), wherein a gas stream is formed from arrows entering chamber from nozzles to exhaust system (Fig. 1: 64a-64e, 76, 80, 82); a transport slot that has a channel to collect and exhaust gases (Fig. 1: 76); gas extracting apparatus with third tube suggested by arrow from 76 to 82 in Fig. 1; valve on first nozzle (Fig. 1: 70); a robot moves wafer (Fig. 1: 62); as for a movable stage, Imai is silent. However, the system is a film measuring system (Fig. 1: 56 and 58). However, the system is a film measuring system (Fig. 1: 56 and 58). And Examiner takes official notice that movable stages are well known in the art for positioning and aligning wafers in measurement systems. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the measuring table be movable in order to position the wafer precisely under the measurement apparatus above.

As for a datum platen with datum slice as a measuring reference point, Imai is silent. However, Sampsell in a real time optical correlation system teaches using a datum slice with datum platen for measurement correlation (Fig. 5: 41, 53; col. 1, lines 10-20). Therefore, it

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would be obvious to one of ordinary skill in the art at the time the invention was made to have a datum platen with datum slice beside the wafer under test in order to provide a reference point to quantify the thickness measurement.

In addition, Imai discloses a second nozzle to the oxygen supplier (Fig. 1: 70). Imai is silent concerning valves on the tubes to the other plurality of nozzles, but there is at least one valve to one nozzle (Fig. 1: 70 with 72). However, Iida in a wafer process apparatus teaches having a valve for a nozzle to control gas into the chamber (col. 20, lines 1-15). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have each nozzle have an accompanying valve in order to control the amount of gas entering the chamber.

In addition, Imai discloses the gas supplier is opened to make purge gas that passes through first tube and second tube and exhausted from first gas nozzle and second gas nozzle to form a gas stream (Fig. 1: 70, 68, 66 to 64a-64d to form gas streams designated by arrows from 64a-64d) during a measuring process (col. 7, lines 1-15). As for the gas supplier and gas-exhausting apparatus being opened continuously in said measuring process, he suggests this for the purge gases fill the system during measurement (col. 7, lines 1-15) and there is continuous opening suggested by the purging gases being at particular flow rate and the exhaust system being controlled and therefore opened to have the chambers be at a higher pressure than atmospheric (col. 7, lines 25-40). Nevertheless, Goodwin in a semiconductor processing system teaches having the input and output of purge gases continuously opened (col. 6, lines 25-35). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the gas supplier and gas-exhausting apparatus opened continuously in said

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measuring process to prevent particulates and other contaminants to adhere to the wafer being measured.

5. **Claims 30, 31, 37, and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)**—previously cited in view of **Sampsell et al. (5,327,286)**—previously cited and further in view of **Goodwin et al. (5,997,588)** further in view of **Danese (6,272,768)**—previously cited.

As for **claims 30, 31, 37, 38** Imai in view of Sampsell and Goodwin disclose everything as above (see **claims 27 and 34** above). However, they are silent concerning a venturi structure for the exhaust system or a motor for the exhaust system. Danese in an apparatus for processing wafers teaches that venturi pumps and root pumps are typical vacuum pumps for withdrawing fluids (col. 7, lines 5-25). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that the system may comprise a venturi structure or a motor for typical vacuum pumps for withdrawal of fluids for wafer processing systems comprise venturi effect pumps or root pumps.

6. **Claim 42** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)**—previously cited in view of **Sampsell et al. (5,327,286)**—previously cited and further in view of **Goodwin et al. (5,997,588)** further in view of **Iida et al. (5,527,417)**—previously cited further in view of **Danese (6,272,768)**—previously cited.

As for **claim 42**, Imai in view of Sampsell, Goodwin, and Iida disclose everything as above (see **claim 41** above). However, Imai is silent concerning a venturi structure for the exhaust system. Danese in an apparatus for processing wafers teaches that venturi pumps are typical vacuum pumps for withdrawing fluids (col. 7, lines 5-25). Therefore, it would be

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obvious to one of ordinary skill in the art at the time the invention was made that the system may comprise a venturi structure for typical vacuum pumps for withdrawal of fluids for wafer processing systems comprise venturi effect pumps.

7. **Claims 48-49** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)**—previously cited in view of **Sampsell et al. (5,327,286)**—previously cited and further in view of **Goodwin et al. (5,997,588)** further in view of **Sato et al. (5,766,360)**—previously cited and **Lane et al. (4,967,381)**—previously cited.

As for **claims 48-49**, Imai in view of Sampsell and Goodwin disclose everything as above (see **claims 27 and 34**). In addition, Imai discloses means for placing said wafer on said stage, a robot moves wafer (Fig. 1: 62); wherein in view of Sampsell stage is movable upon a movable transport apparatus to position properly under inspection system (Sampsell: Fig. 5, 51, 52, 53); means for irradiating light to the sample (Fig. 1: 56).

As for measuring the thickness of the wafer, Imai is silent, but the system measures film thickness (col. 5, lines 1-10). Sato in a substrate processing apparatus teaches that film measuring may comprise measuring the thickness of the wafer before and after film deposition (col. 6, lines 10-15). Therefore, it would be obvious to one skilled in the art to substitute film thickness with measuring wafer thickness before and after film deposition, for they are equivalent measurements in the art, for measuring film thickness on a wafer.

As for data being shown on a monitor and being analyzed to obtain thicknesses, Imai is silent. However, Lane in a process control interface teaches having a display and analysis means such as a cpu in order to monitor processes (Fig. 1: 36, 32). Therefore, it would be obvious to

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one of ordinary skill in the art at the time the invention was made to have a monitor and analysis means in order to monitor film thickness and to provide process control.

8. **Claim 50** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)**—previously cited in view of **Sampsell et al. (5,327,286)**—previously cited and further in view of **Goodwin et al. (5,997,588)** further in view of **Iida et al. (5,527,417)**—previously cited further in view of **Sato et al. (5,766,360)**—previously cited and **Lane et al. (4,967,381)**.

As for **claim 50**, Imai in view of Sampsell, Goodwin, and Iida disclose everything as above (see **claim 41**). In addition, Imai discloses means for placing said wafer on said stage, a robot moves wafer (Fig. 1: 62); wherein in view of Sampsell stage is movable upon a movable transport apparatus to position properly under inspection system (Sampsell: Fig. 5, 51, 52, 53); means for irradiating light to the sample (Fig. 1: 56).

As for measuring the thickness of the wafer, Imai is silent, but the system measures film thickness (col. 5, lines 1-10). Sato in a substrate processing apparatus teaches that film measuring may comprise measuring the thickness of the wafer before and after film deposition (col. 6, lines 10-15). Therefore, it would be obvious to one skilled in the art to substitute film thickness with measuring wafer thickness before and after film deposition, for they are equivalent measurements in the art, for measuring film thickness on a wafer.

As for data being shown on a monitor and being analyzed to obtain thicknesses, Imai is silent. However, Lane in a process control interface teaches having a display and analysis means such as a cpu in order to monitor processes (Fig. 1: 36, 32). Therefore, it would be obvious to

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one of ordinary skill in the art at the time the invention was made to have a monitor and analysis means in order to monitor film thickness and to provide process control.

Response to Arguments

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice. Applicant must seasonably challenge well known statements and statements based on personal knowledge when they are made by the Board of Patent Appeals and Interferences. In re Selmi, 156 F.2d 96, 70 USPQ 197 (CCPA 1946); In re Fischer, 125 F.2d 725, 52 USPQ 473 (CCPA 1942). See also In re Boon, 439 F.2d 724, 169

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USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well known statement is taken to be admitted prior art. In re Chevenard, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well-known statement in the next reply after the Office action in which the well known statement was made.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431. .

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

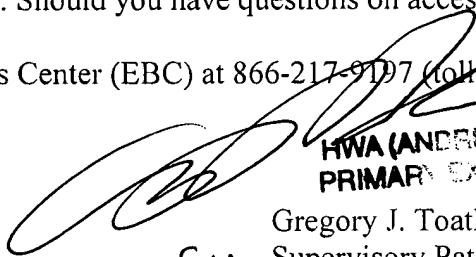
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supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gs

August 4, 2006



HWA (ANDREW) LEE
PRIMARY EXAMINER

Set:

Gregory J. Toatley, Jr.
Supervisory Patent Examiner
Art Unit 2877